IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

12. (Currently Amended) A compressor designed to be lowered into a well of a natural gas reservoir to assist in extracting gas from the reservoir, the compressor comprising:

at least one casing;

at least one rotor mounted within the casing;

at least one electric motor for driving the rotor ~~having a stator with windings mounted in the casing and an armature formed as part of the rotor~~;

one or more gas bearings supporting the rotor for rotation relative to the ~~stator~~casing, the gas bearings being arranged at an upstream end and a downstream end thereby arranged at opposite ends of the motor;

[[a]]at least one bladed impeller wheel for compressing a production of gas from a reservoir which is mounted on an overhanging end of the rotor that projects beyond each of the gas bearings at ~~one end~~the upstream end of the motor[[,]];

at least one auxiliary compressor mounted on the downstream end of the rotor so that the auxiliary compressor draws from down stream the bladed impeller wheel and pressurizes the gas before supplying the gas to the bearings of the rotor;

wherein ~~such that~~ all the gas bearings of [[an]]the auxiliary compressor and of the electric motor are arranged on a same side of the bladed impeller wheel; and

during operation, the gas flows over to cool the electric motor.

13. (Previously Presented) The compressor of claim 12, wherein the rotor is formed hollow to assist in cooling of the motor.

14. (Currently Amended) The compressor of claim 12, wherein the ~~bladed impeller wheel is arranged at an upstream end of the rotor and wherein an auxiliary compressor is mounted on a downstream end of the rotor, the auxiliary compressor drawing the gas~~

~~from a downstream of a main compressor and serving to supply the gas after further pressurization to the bearings of the rotor~~ the casing includes a channel formed therein which runs parallel to the rotor between an output of the auxillary compressor mounted at the downstream end of the rotor up and the upstream end of the rotor for supplying the gas to the bearings of the rotor.

15. (Previously Presented) The compressor of claim 14, wherein both the main compressor and the auxiliary compressor are overhung with all the bearings being situated axially between the main compressor and the auxiliary compressor.

16. (Previously Presented) The compressor of claim 14, wherein the auxiliary compressor is also an axial compressor.

17. (Previously Presented) The compressor of claim 15, wherein the auxiliary compressor is also an axial compressor.

18. (Previously Presented) The compressor of claim 14, wherein the auxiliary compressor is a centrifugal compressor.

19. (Previously Presented) The compressor of claim 15, wherein the auxiliary compressor is a centrifugal compressor.

20. (Previously Presented) The compressor of claim 14, further comprising:
a purifier is provided in an intake of the auxiliary compressor.

21. (Previously Presented) The compressor of claim 19, further comprising:

a purifier is provided in an intake of the auxiliary compressor.

22. (Previously Presented) The compressor of claim 14, wherein the gas pressurized by the auxiliary compressor is discharged into an axial flow of produced gas after passing through the bearings.

23. (Previously Presented) The compressor of claim 21, wherein the gas pressurized by the auxiliary compressor is discharged into an axial flow of produced gas after passing through the bearings.

24. (Currently Amended) The compressor of claim [[14]]22, further comprising:

means for transferring heat from the gas discharged from the bearings to the axial flow of the gas and for recycling a cooled gas to [[the]]an intake of the auxiliary compressor, whereby the gas supply to the bearings flows through ~~an essentially~~a substantially closed circuit.

25. (Currently Amended) The compressor of claim [[20]]23, further comprising:

means for transferring heat from the gas discharged from the bearings to the axial flow of the gas and for recycling a cooled gas to [[the]]an intake of the auxiliary compressor, whereby the gas supply to the bearings flows through ~~an essentially~~a substantially closed circuit.

26. (Currently Amended) The compressor system of claim [[1]]12, further comprising

at least one additional auxiliary compressor arranged in tandem with the auxiliary compressor.

27. (Currently Amended) The compressor system of claim [[4]]14, further comprising

at least one additional auxiliary compressor arranged in tandem with the auxiliary compressor.

28. (Currently Amended) The compressor system of claim [[15]]17, further comprising at least one additional auxiliary compressor arranged in tandem with the auxiliary compressor.

29. (Currently Amended) The compressor system of claim [[19]]25, further comprising at least one additional auxiliary compressor arranged in tandem with the auxiliary compressor.

30. (Previously Presented) The compressor system of claim 25, further comprising: a plurality of auxiliary compressors arranged in tandem position at different heights along a bore hole of a well.

31. (Cancelled).

32. (Cancelled).

33. (New) A downhole compressor comprising:

at least one rotor with at least a downstream gas bearing and an upstream gas bearing mounted thereon;

at least one casing for supporting the downstream gas bearing and an upstream gas bearing of the rotor so as to permit rotation of the rotor relative to the casing, wherein the casing includes a channel formed therein which runs parallel to the rotor between and the downstream gas bearing and the upstream gas bearing;

at least one overhanging bladed impeller wheel for compressing a gas, the overhanging bladed impeller wheel mounted on an upstream end of the rotor that projects beyond all the upstream gas bearing;

at least one auxiliary compressor mounted for further compressing the gas, the auxiliary compressor mounted on a downstream end of the rotor that projects beyond all the downstream gas bearing;

at least one electric motor disposed on the rotor between the upstream gas bearing and the gas downstream, whereby the motor and the downstream gas bearing and the upstream gas bearing are all situated in between the overhanging bladed impeller wheel and the auxiliary compressor so that the gas flows from the overhanging bladed impeller wheel to cool the electric motor and afterwards at least a portion of the gas flows through the auxiliary compressor into the channel in the casing in a direction towards the upstream end of the rotor to supply the gas to the upstream gas bearing and the downstream gas bearing.